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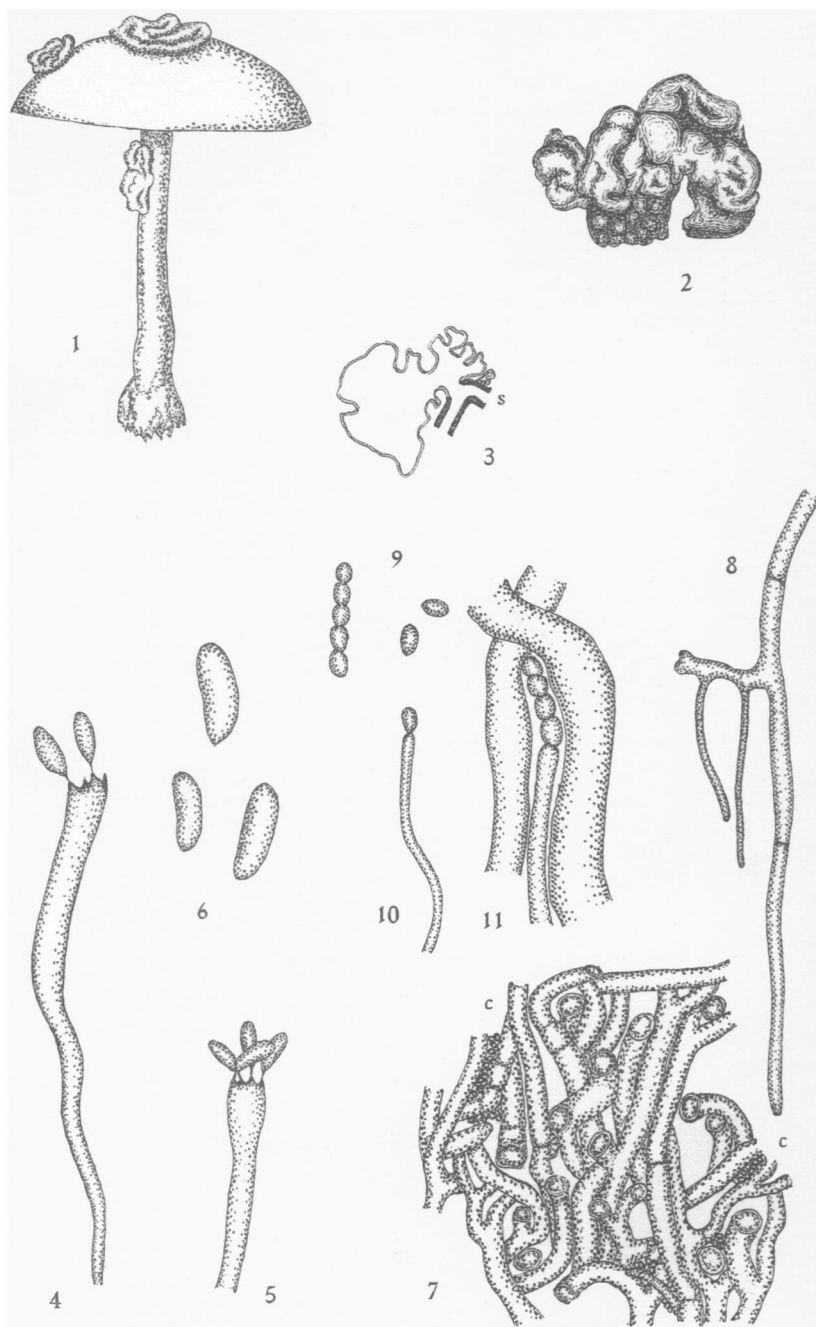
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EXOBASIDIUM MYCETOPHILUM (Peck) Burt

Structure and Nature of *Tremella mycetophila* Peck.

BY EDWARD A. BURT

(WITH PLATE 23)

During protracted wet weather in August, *Tremella mycetophila* Peck is occasionally found in northern New York and Vermont on the stems and pilei of *Collybia dryophila*. Its fructifications occur as distortions on the host plant and are conspicuous and characteristic, as shown in Fig. 1, which is a copy of the illustration given with the original description.* These distorting fructifications sometimes become an inch in diameter (Fig. 2) and are then thin-walled, hollow sacs, as shown in section in Fig. 3.

In the original description, the fructifications are stated to be tremelloid-fleshy, but this term seems to me to be applicable only to old specimens collected during rainy weather; under more normal conditions the fungus is simply fleshy. That the substance is fleshy rather than tremelloid or gelatinous is shown also by the dried specimens, which do not assume the appearance of dried gum or resin upon drying and do become soft and pliant much more readily upon being moistened than is the case with tremelloid species.

Several collections of *Tremella mycetophila* which have been made in recent years and an especially fine specimen contributed by Professor Peck last August, while we were at Floodwood, N. Y., and preserved in alcohol, have made it possible to supply the microscopical characters for this fungus and to give its generic location on the basis of this more complete knowledge of its nature.

Vertical sections of the fructifications show at the surface a hymenium consisting of basidia of the usual simple, cylindric type, $40 \times 5-7 \mu$, each bearing at its outer end on short sterigmata four hyaline spores (Figs. 4, 5). These basidiospores are even, inequilateral or slightly curved, $5-7 \times 1\frac{1}{2}-2\frac{1}{2} \mu$ (Fig. 6); they are white when collected in quantity on a glass slip.

* Rep. N. Y. Mus. 28: 53. pl. 1. f. 4. 1879.

The deeper tissue from which the basidia arise, consists of compactly arranged, sharply outlined, even-walled, cylindric hyphae and of innumerable minute conidial spores, which occupy the spaces between the hyphae (Fig. 7). The hyphae are usually $3-5\ \mu$ in diameter but with some slender branches (Fig. 8). Clamp connections are sometimes, but not usually, present at the septa.

The conidia are hyaline, even, about $2 \times 1\frac{1}{2}\ \mu$ (Fig. 9). They are present in abundance in the specimens which I have collected during eight seasons in the widely separated localities, East Galway and Floodwood, N. Y., and Ripton, Vt., but are most abundant in comparison with the basidiospores in the large fructification of Figs. 2 and 3; they are perhaps always produced by this species.

It has been difficult to make out the mode of origin of the conidia on account of their minute size and position between crowded hyphae. I have found, however, that if thin sections, cut free-hand, are stained in a saturated alcoholic solution of eosin and then mounted in water and potassium hydrate after washing away the superfluous eosin, the tissues of these sections will retain their intense red color for half an hour or longer and may be dissociated sufficiently for study by gentle pressure on the cover-glass. By the examination of such preparations with a $\frac{1}{12}$ -in. objective, the conidia are seen to be formed in bead-like chains by the constriction of the smaller hyphal branches (Figs. 10, 11).

Reference is not often made to the production of a crop of conidia in addition to the basidiospores regularly produced by a toadstool, yet several instances are known in the Tremellaceae, Agaricaceae and Polyporaceae and they do occur occasionally in the Thelephoraceae, I find. They should not be regarded as entitling the present fungus to special generic rank.

The genus *Tremella* has basidia longitudinally and cruciately divided and subhymenial hyphae with the outer portion of the cell wall indistinct through gelatinous modification; the fructifications as a whole are also distinctly gelatinous and even tremulous in wet weather. The fungus under consideration can not therefore be a *Tremella*; in fact its structural characters are such that it should not be included in the Tremellaceae but in the Thelephoraceae, provided the distortions are not merely monstrous growths of *Collybia dryophila* itself—which I do not believe after microscopic

comparisons with the lamellae of *C. dryophila*. I would transfer the fungus to the genus *Exobasidium*, with the original description of the species changed as follows :

EXOBASIDIUM MYCETOPHILUM (Peck) Burt

Tremella mycetophila Peck, Rep. N. Y. Mus. 28 : 53. pl. 1. f. 4. 1879.

Suborbicular, depressed, gyrose-plicate, fleshy, slightly pruinose, yellowish or pallid, .35–1 inch broad ; basidia simple, cylindric, 4-spored : basidiospores simple, hyaline, even, inequilateral or slightly curved, $5-7 \times 1.5-2.5 \mu$; conidia simple, hyaline, even, $2 \times 1.5 \mu$, concatenate at the ends of slender subhymenial hyphae. (Plate 23.)

On stem and pileus of *Collybia dryophila*, August.

NEW YORK : Oneida, *Warne* ; North Elbe, and Floodwood, *Peck* ; East Galway and Floodwood, *Burt* ; Syracuse, *Underwood* ; New York, *Cushier*.

NEW HAMPSHIRE : Shelburne, *Farlow*.

VERMONT : Ripton, *Burt*.

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Explanation of Plate

FIG. 1. Three fructifications of *Exobasidium mycetophilum* on *Collybia dryophila*, natural size (after Peck).

FIG. 2. A large fructification of *E. mycetophilum*, nat. size ; and Fig. 3, a longitudinal section through the same and the stem, *s.* of *C. dryophila*.

FIGS. 4 and 5. Basidia bearing basidiospores, $\times 1140$.

FIG. 6. Three basidiospores, $\times 1760$.

FIG. 7. Part of a section, showing groups of conidia, *c*, between the hyphae of the deeper tissue of the fructification, $\times 500$. Fig. 8. Portion of a hypha, showing slender branches.

FIG. 9. Conidia, a connected group of four at the left, $\times 1760$.

FIG. 10. A conidium borne at the end of a slender hypha, $\times 1140$.

FIG. 11. A chain of four conidia at the end of a slender hypha which lies between coarser hyphae, $\times 1760$.